

LISTING OF THE CLAIMS

A complete listing of the currently pending claims is provided below. This listing supersedes and replaces any prior-submitted listings.

1-15. (Canceled)

16. (Currently Amended) An optical instrument lighting system for [imaging] illuminating stained biological material fixed on a slide, comprising:

a light source comprising an array of closely spaced LEDs, including a first LED having a first narrow band wavelength and a second LED having a second narrow band wavelength different [and separately controllable] from the first narrow band wavelength, the first and second LEDs located side-by-side and being separately controllable; and

at least one lens disposed between the light source and the slide,

wherein the light source illuminates the slide using light emitted from one or both of the first and second LEDs, without dichroic mixing of the light, and without the light passing through a bandwidth filter.

17. (Currently Amended) The system of claim 16, wherein the [light source] first LED comprises a red LED.

18. (Currently Amended) The system of claim 17[16], wherein the [light source] second LED comprises a green LED.

19. (Previously Presented) The system of claim 16, wherein the light source comprises an array of green LEDs.

20. (Previously Presented) The system of claim 16, wherein the light source comprises an array of red LEDs.

21. (Previously Presented) The system of claim 16, wherein the light source comprises an array of LEDs, the array including at least one green LED and at least one red LED.

22. (Currently Amended) The system of claim 16, further comprising a third LED having a third narrow band wavelength different from the first and second [narrow band] wavelengths.

23. (Previously Presented) The system of claim 16, wherein the first wavelength is between about 690 nm and about 750 nm.

24. (Previously Presented) The system of claim 16, wherein the second wavelength is between about 500 nm and about 600 nm.

25. (Previously Presented) The system of claim 16, wherein the light source comprises a first array of LEDs having the first narrow band wavelength, and a second array of LEDs having the second narrow band wavelength.

26. (Previously Presented) The system of claim 25, wherein the a first array of LEDs are formed on a first substrate, and the second array of LEDs are formed on a second substrate.

27. (Canceled)

28. (Previously Presented) The system of claim 25, wherein the first and second LED arrays are formed on a single substrate.

29. (Currently Amended) An optical instrument lighting system for [imaging] illuminating a biological sample, the system comprising an LED array, the LED array comprising:

a substrate;

a first narrow band wavelength LED consisting of a first die, the first die attached to the substrate;

a second narrow band wavelength LED consisting of a second die, the second die attached to the substrate, the first narrowband wavelength different from the second narrowband wavelength; and

a plurality of lenses, including a first lens positioned over the first die, and a second lens positioned over the second die,

wherein the lighting system illuminates the sample using light emitted from one or both of the first and second LEDs, without the light passing through a bandwidth filter.

30. (Previously Presented) The LED array of claim 29, comprising multiple green LEDs.

31. (Previously Presented) The LED array of claim 29, comprising multiple red LEDs.

32. (Previously Presented) The LED array of claim 29, comprising at least one red LED and at least one green LED.

33-36. (Canceled)

37. (Currently Amended) An optical instrument lighting system for illuminating [imaging] stained biological material fixed on a slide, comprising:

a first array of one or more LEDs having a first narrow band wavelength;

a second array of one or more LEDs having a second narrow band wavelength different from the first narrow band wavelength;

a third array of one or more LEDs having a third narrow band wavelength different from the first and second narrow band wavelengths, each of the first, second and third LED arrays being formed on a single substrate; and

at least one lens disposed between the slide and the respective first, second and third LED arrays,

wherein the lighting system illuminates the slide using light emitted from one or more of the first, second, and third LED arrays, without the light passing through a bandwidth filter.

38. (Currently Amended) The system of claim 16, wherein the optical instrument comprises a microscope, the LED array is positioned in a general position of a lamp filament of a Koehler illuminator, and the at least one lens comprises a Koehler illuminator.

39. (Previously Presented) The system of claim 16, wherein the light source comprises an LED microchip module.

40. (Currently Amended) The system of claim 39, wherein the LED microchip module comprises a substrate, the [an] array of LEDs[, the array] including one or more red LEDs and one or more green LEDs, the one or more red LEDs and the one or more green LEDs attached to the substrate, and a plurality of lenses, including a first lens positioned over at least one red LED, and a second lens positioned over at least one green LED.

41. (Previously Presented) The system of claim 40, wherein the one or more red LEDs and the one or more green LEDs are embedded in a potting material, and wherein the first and second lenses are attached to the potting material.

42. (Previously Presented) The LED array of claim 29, wherein the first and second dies are embedded in a potting material, and wherein the first and second lenses are attached to the potting material.

43. (New) An illumination source for a microscope, comprising:
an LED module comprising an array of closely spaced LEDs, including a first LED having a first narrow band wavelength and a second LED having a second narrow band wavelength different from the first narrow band wavelength, the first and second LEDs being separately controllable and arranged side-by-side, such that the two LEDs fall within a 4 mm diameter.